AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims

Claim 1 (original): A method for treating disorders associated with radical depolarization of excitable membranes by activating a K_{ATP} channel which comprises administering to an individual in need thereof an effective amount of an active agent selected from the group consisting of:

(a) a compound of the following formula

Cys-Xaa_1-Ile-Xaa_2-Asn-Gln-Xaa_3-Cys-Xaa_4-Gln-Xaa_5-Leu-Asp-Asp-Cys-Cys-Ser-Xaa_1-Xaa_3-Cys-Asn-Xaa_1-Xaa_4-Asn-Xaa_3-Cys-Val (SEQ ID NO:1),wherein Xaa_1 and Xaa_3 are independently Arg, homoarginine, ornithine, Lys, N-methyl-Lys, N,N-dimethyl-Lys, N,N,N-trimethyl-Lys, any synthetic basic amino acid, His or halo-His; Xaa_2 is Pro or hydroxy-Pro (Hyp); Xaa_4 is Phe, Tyr, meta-Tyr, ortho-Tyr, nor-Tyr, mono-halo-Tyr, di-halo-Tyr, O-sulpho-Tyr, O-phospho-Tyr, nitro-Tyr, Trp (D or L), neo-Trp, halo-Trp (D or L) or any synthetic aromatic amino acid; and Xaa_5 is His or halo-His,

(b) an analog of the compound of (a), said analog selected from the group consisting of:

κ-PVIIA[R18A]: Cys-Arg-Ile-Hyp-Asn-Gln-Lys-Cys-Phe-Gln-His-Leu-Asp-Asp-Cys-Cys-Ser-Ala-Lys-Cys-Asn-Arg-Phe-Asn-Lys-Cys-Val (SEQ ID NO:2);

κ-PVIIA[R22A]: Cys-Arg-Ile-Hyp-Asn-Gln-Lys-Cys-Phe-Gln-His-Leu-Asp-Asp-Cys-Cys-Ser-Arg-Lys-Cys-Asn-Ala-Phe-Asn-Lys-Cys-Val (SEQ ID NO:3);

κ-PVIIA[I3A]: Cys-Arg-Ala-Hyp-Asn-Gln-Lys-Cys-Phe-Gln-His-Leu-Asp-Asp-Cys-Cys-Ser-Arg-Lys-Cys-Asn-Arg-Phe-Asn-Lys-Cys-Val (SEQ ID NO:4);

κ-PVIIA[K19A]: Cys-Arg-Ile-Hyp-Asn-Gln-Lys-Cys-Phe-Gln-His-Leu-Asp-Asp-Cys-Cys-Ser-Arg-Ala-Cys-Asn-Arg-Phe-Asn-Lys-Cys-Val (SEQ ID NO:5);

κ-PVIIA[R2A]: Cys-Ala-Ile-Hyp-Asn-Gln-Lys-Cys-Phe-Gln-His-Leu-Asp-Asp-Cys-Cys-Ser-Arg-Lys-Cys-Asn-Arg-Phe-Asn-Lys-Cys-Val (SEQ ID NO:6);

κ-PVIIA[F9A]: Cys-Arg-Ile-Hyp-Asn-Gln-Lys-Cys-Ala-Gln-His-Leu-Asp-Asp-Cys-Cys-Ser-Arg-Lys-Cys-Asn-Arg-Phe-Asn-Lys-Cys-Val (SEQ ID NO:7);

κ-PVIIA[K25A]: Cys-Arg-Ile-Hyp-Asn-Gln-Lys-Cys-Phe-Gln-His-Leu-Asp-Asp-Cys-Cys-Ser-Arg-Lys-Cys-Asn-Arg-Phe-Asn-Ala-Cys-Val (SEQ ID NO:8);

κ-PVIIA[R2K]: Cys-Lys-Ile-Hyp-Asn-Gln-Lys-Cys-Phe-Gln-His-Leu-Asp-Asp-Cys-Cys-Ser-Arg-Lys-Cys-Asn-Arg-Phe-Asn-Lys-Cys-Val (SEQ ID NO:9);

κ-PVIIA[K7A]: Cys-Arg-Ile-Hyp-Asn-Gln-Ala-Cys-Phe-Gln-His-Leu-Asp-Asp-Cys-Cys-Ser-Arg-Lys-Cys-Asn-Arg-Phe-Asn-Lys-Cys-Val (SEQ ID NO:10);

κ-PVIIA[F9M]: Cys-Arg-Ile-Hyp-Asn-Gln-Lys-Cys-Met-Gln-His-Leu-Asp-Asp-Cys-Cys-Ser-Arg-Lys-Cys-Asn-Arg-Phe-Asn-Lys-Cys-Val (SEQ ID NO:11);

κ-PVIIA[F9Y]: Cys-Arg-Ile-Hyp-Asn-Gln-Lys-Cys-Tyr-Gln-His-Leu-Asp-Asp-Cys-Cys-Ser-Arg-Lys-Cys-Asn-Arg-Phe-Asn-Lys-Cys-Val (SEQ ID NO:12);

κ-PVIIA[R2Q]: Cys-Gln-Ile-Hyp-Asn-Gln-Lys-Cys-Phe-Gln-His-Leu-Asp-Asp-Cys-Cys-Ser-Arg-Lys-Cys-Asn-Arg-Phe-Asn-Lys-Cys-Val (SEQ ID NO:13);

κ-PVIIA[H11A]: Cys-Arg-Ile-Hyp-Asn-Gln-Lys-Cys-Phe-Gln-Ala-Leu-Asp-Asp-Cys-Cys-Ser-Arg-Lys-Cys-Asn-Arg-Phe-Asn-Lys-Cys-Val (SEQ ID NO:14);

κ-PVIIA[D14A]: Cys-Arg-Ile-Hyp-Asn-Gln-Lys-Cys-Phe-Gln-His-Leu-Asp-Ala-Cys-Cys-Ser-Arg-Lys-Cys-Asn-Arg-Phe-Asn-Lys-Cys-Val (SEQ ID NO:15);

κ-PVIIA[Q6A]: Cys-Arg-Ile-Hyp-Asn-Ala-Lys-Cys-Phe-Gln-His-Leu-Asp-Asp-Cys-Cys-Ser-Arg-Lys-Cys-Asn-Arg-Phe-Asn-Lys-Cys-Val (SEQ ID NO:16);

κ-PVIIA[N21A]: Cys-Arg-Ile-Hyp-Asn-Gln-Lys-Cys-Phe-Gln-His-Leu-Asp-Asp-Cys-Cys-Ser-Arg-Lys-Cys-Ala-Arg-Phe-Asn-Lys-Cys-Val (SEQ ID NO:17);

κ-PVIIA[S17A]: Cys-Arg-Ile-Hyp-Asn-Gln-Lys-Cys-Phe-Gln-His-Leu-Asp-Asp-Cys-Cys-Ala-Arg-Lys-Cys-Asn-Arg-Phe-Asn-Lys-Cys-Val (SEQ ID NO:18);

κ-PVIIA[N24A]: Cys-Arg-Ile-Hyp-Asn-Gln-Lys-Cys-Phe-Gln-His-Leu-Asp-Asp-Cys-Cys-Ser-Arg-Lys-Cys-Asn-Arg-Phe-Ala-Lys-Cys-Val (SEQ ID NO:19);

κ-PVIIA[L12A]: Cys-Arg-Ile-Hyp-Asn-Gln-Lys-Cys-Phe-Gln-His-Ala-Asp-Asp-Cys-Cys-Ser-Arg-Lys-Cys-Asn-Arg-Phe-Asn-Lys-Cys-Val (SEQ ID NO:20);

κ-PVIIA[D13A]: Cys-Arg-Ile-Hyp-Asn-Gln-Lys-Cys-Phe-Gln-His-Leu-Ala-Asp-Cys-Cys-Ser-Arg-Lys-Cys-Asn-Arg-Phe-Asn-Lys-Cys-Val (SEQ ID NO:21);

κ-PVIIA[Q10A]: Cys-Arg-Ile-Hyp-Asn-Gln-Lys-Cys-Phe-Ala-His-Leu-Asp-Asp-Cys-Cys-Ser-Arg-Lys-Cys-Asn-Arg-Phe-Asn-Lys-Cys-Val (SEQ ID NO:22);

κ-PVIIA[V27A]: Cys-Arg-Ile-Hyp-Asn-Gln-Lys-Cys-Phe-Gln-His-Leu-Asp-Asp-Cys-Cys-Ser-Arg-Lys-Cys-Asn-Arg-Phe-Asn-Lys-Cys-Ala (SEQ ID NO:23);

κ-PVIIA[O4A]: Cys-Arg-Ile-Ala-Asn-Gln-Lys-Cys-Phe-Gln-His-Leu-Asp-Asp-Cys-Cys-Ser-Arg-Lys-Cys-Asn-Arg-Phe-Asn-Lys-Cys-Val (SEQ ID NO:24); and

κ-PVIIA[N5A]: Cys-Arg-Ile-Hyp-Ala-Gln-Lys-Cys-Phe-Gln-His-Leu-Asp-Asp-Cys-Cys-Ser-Arg-Lys-Cys-Asn-Arg-Phe-Asn-Lys-Cys-Val (SEQ ID NO:25);

(c) a derivative of (a) or (b); and

(d) a physiologically acceptable salt thereof.

Claim 2 (original): The method of claim 1, wherein Xaa_2 is hydroxy-Pro.

Claim 3 (original): The method of claim 1, wherein Xaa_1 is Arg, Xaa_3 is Lys, Xaa_4 is Phe and Xaa_5 is His.

Claim 4 (original): The method of claim 3, wherein Xaa_2 is hydroxy-Pro.

Claim 5 (original): The method of claim 1, wherein said disorder is cardiac ischemia.

Claim 6 (original): The method of claim 1, wherein said disorder is cerebral ischemia.

Claim 7 (original): The method of claim 1, wherein said disorder is asthma.

Claim 8 (original): The method of claim 1, wherein said disorder is ocular ischemia.

Claim 9 (original): The method of claim 1, wherein the derivative is peptide of (a) or (b) in which the Arg residues may be substituted by Lys, ornithine, homoargine, nor-Lys, N-methyl-Lys, N,N-dimethyl-Lys, N,N,N-trimethyl-Lys or any synthetic basic amino acid; the Lys residues may be substituted by Arg, ornithine, homoargine, nor-Lys, or any synthetic basic amino acid; the Tyr residues may be substituted with any synthetic hydroxy containing amino acid; the Ser residues may be substituted with Thr or any synthetic hydroxylated amino acid; the Thr residues may be substituted with Ser or any synthetic hydroxylated amino acid; the Phe and Trp residues may be substituted with any synthetic aromatic amino acid; the Asn, Ser, Thr or Hyp residues may be glycosylated (contain an N-glycan or an O-glycan); the Cys residues may be in D or L configuration and may optionally be substituted with homocysteine (D or L); the Tyr residues may also be substituted with the 3-hydroxyl or 2-hydroxyl isomers (meta-Tyr or ortho-Tyr, respectively) and corresponding O-sulpho- and O-phospho-derivatives; the acidic amino acid residues may be substituted with any synthetic acidic amino acid, e.g., tetrazolyl derivatives of Gly and Ala; the aliphatic amino acids may be substituted by synthetic derivatives bearing non-natural aliphatic branched or linear side chains C_nH_{2n+2} up to and including n=8; and pairs of Cys residues may be replaced pairwise with isoteric lactam or ester-thioether replacements, such as Ser/(Glu or Asp), Lys/(Glu or Asp) or Cys/Ala combinations.

Claim 10 (original): A method for treating cardiac ischemia which comprises administering to an individual in need thereof an effective amount of an active agent selected from the group consisting of:

(a) a compound of the following formula

Cys-Xaa$_1$-Ile-Xaa$_2$-Asn-Gln-Xaa$_3$-Cys-Xaa$_4$-Gln-Xaa$_5$-Leu-Asp-Asp-Cys-Cys-Ser-Xaa$_1$-Xaa$_3$-Cys-Asn-Xaa$_1$-Xaa$_4$-Asn-Xaa$_3$-Cys-Val (SEQ ID NO:1),wherein Xaa$_1$ and Xaa$_3$ are independently Arg, homoarginine, ornithine, Lys, N-methyl-Lys, N,N-dimethyl-Lys, N,N,N-trimethyl-Lys, any synthetic basic amino acid, His or halo-His; Xaa$_2$ is Pro or hydroxy-Pro (Hyp); Xaa$_4$ is Phe, Tyr, meta-Tyr, ortho-Tyr, nor-Tyr, mono-halo-Tyr, di-halo-Tyr, O-sulpho-Tyr, O-phospho-Tyr, nitro-Tyr, Trp (D or L), neo-Trp, halo-Trp (D or L) or any synthetic aromatic amino acid; and Xaa$_5$ is His or halo-His,

(b) an analog of the compound of (a), said analog selected from the group consisting of:

κ-PVIIA[R18A]: Cys-Arg-Ile-Hyp-Asn-Gln-Lys-Cys-Phe-Gln-His-Leu-Asp-Asp-Cys-Cys-Ser-Ala-Lys-Cys-Asn-Arg-Phe-Asn-Lys-Cys-Val (SEQ ID NO:2);

κ-PVIIA[R22A]: Cys-Arg-Ile-Hyp-Asn-Gln-Lys-Cys-Phe-Gln-His-Leu-Asp-Asp-Cys-Cys-Ser-Arg-Lys-Cys-Asn-Ala-Phe-Asn-Lys-Cys-Val (SEQ ID NO:3);

κ-PVIIA[I3A]: Cys-Arg-Ala-Hyp-Asn-Gln-Lys-Cys-Phe-Gln-His-Leu-Asp-Asp-Cys-Cys-Ser-Arg-Lys-Cys-Asn-Arg-Phe-Asn-Lys-Cys-Val (SEQ ID NO:4);

κ-PVIIA[K19A]: Cys-Arg-Ile-Hyp-Asn-Gln-Lys-Cys-Phe-Gln-His-Leu-Asp-Asp-Cys-Cys-Ser-Arg-Ala-Cys-Asn-Arg-Phe-Asn-Lys-Cys-Val (SEQ ID NO:5);

κ-PVIIA[R2A]: Cys-Ala-Ile-Hyp-Asn-Gln-Lys-Cys-Phe-Gln-His-Leu-Asp-Asp-Cys-Cys-Ser-Arg-Lys-Cys-Asn-Arg-Phe-Asn-Lys-Cys-Val (SEQ ID NO:6);

κ-PVIIA[F9A]: Cys-Arg-Ile-Hyp-Asn-Gln-Lys-Cys-Ala-Gln-His-Leu-Asp-Asp-Cys-Cys-Ser-Arg-Lys-Cys-Asn-Arg-Phe-Asn-Lys-Cys-Val (SEQ ID NO:7);

κ-PVIIA[K25A]: Cys-Arg-Ile-Hyp-Asn-Gln-Lys-Cys-Phe-Gln-His-Leu-Asp-Asp-Cys-Cys-Ser-Arg-Lys-Cys-Asn-Arg-Phe-Asn-Ala-Cys-Val (SEQ ID NO:8);

κ-PVIIA[R2K]: Cys-Lys-Ile-Hyp-Asn-Gln-Lys-Cys-Phe-Gln-His-Leu-Asp-Asp-Cys-Cys-Ser-Arg-Lys-Cys-Asn-Arg-Phe-Asn-Lys-Cys-Val (SEQ ID NO:9);

κ-PVIIA[K7A]: Cys-Arg-Ile-Hyp-Asn-Gln-Ala-Cys-Phe-Gln-His-Leu-Asp-Asp-Cys-Cys-Ser-Arg-Lys-Cys-Asn-Arg-Phe-Asn-Lys-Cys-Val (SEQ ID NO:10);

κ-PVIIA[F9M]: Cys-Arg-Ile-Hyp-Asn-Gln-Lys-Cys-Met-Gln-His-Leu-Asp-Asp-Cys-Cys-Ser-Arg-Lys-Cys-Asn-Arg-Phe-Asn-Lys-Cys-Val (SEQ ID NO:11);

κ-PVIIA[F9Y]: Cys-Arg-Ile-Hyp-Asn-Gln-Lys-Cys-Tyr-Gln-His-Leu-Asp-Asp-Cys-Cys-Ser-Arg-Lys-Cys-Asn-Arg-Phe-Asn-Lys-Cys-Val (SEQ ID NO:12);

κ-PVIIA[R2Q]: Cys-Gln-Ile-Hyp-Asn-Gln-Lys-Cys-Phe-Gln-His-Leu-Asp-Asp-Cys-Cys-Ser-Arg-Lys-Cys-Asn-Arg-Phe-Asn-Lys-Cys-Val (SEQ ID NO:13);

κ-PVIIA[H11A]: Cys-Arg-Ile-Hyp-Asn-Gln-Lys-Cys-Phe-Gln-Ala-Leu-Asp-Asp-Cys-Cys-Ser-Arg-Lys-Cys-Asn-Arg-Phe-Asn-Lys-Cys-Val (SEQ ID NO:14);

κ-PVIIA[D14A]: Cys-Arg-Ile-Hyp-Asn-Gln-Lys-Cys-Phe-Gln-His-Leu-Asp-Ala-Cys-Cys-Ser-Arg-Lys-Cys-Asn-Arg-Phe-Asn-Lys-Cys-Val (SEQ ID NO:15);

κ-PVIIA[Q6A]: Cys-Arg-Ile-Hyp-Asn-Ala-Lys-Cys-Phe-Gln-His-Leu-Asp-Asp-Cys-Cys-Ser-Arg-Lys-Cys-Asn-Arg-Phe-Asn-Lys-Cys-Val (SEQ ID NO:16);

κ-PVIIA[N21A]: Cys-Arg-Ile-Hyp-Asn-Gln-Lys-Cys-Phe-Gln-His-Leu-Asp-Asp-Cys-Cys-Ser-Arg-Lys-Cys-Ala-Arg-Phe-Asn-Lys-Cys-Val (SEQ ID NO:17);

κ-PVIIA[S17A]: Cys-Arg-Ile-Hyp-Asn-Gln-Lys-Cys-Phe-Gln-His-Leu-Asp-Asp-Cys-Cys-Ala-Arg-Lys-Cys-Asn-Arg-Phe-Asn-Lys-Cys-Val (SEQ ID NO:18);

κ-PVIIA[N24A]: Cys-Arg-Ile-Hyp-Asn-Gln-Lys-Cys-Phe-Gln-His-Leu-Asp-Asp-Cys-Cys-Ser-Arg-Lys-Cys-Asn-Arg-Phe-Ala-Lys-Cys-Val (SEQ ID NO:19);

κ-PVIIA[L12A]: Cys-Arg-Ile-Hyp-Asn-Gln-Lys-Cys-Phe-Gln-His-Ala-Asp-Asp-Cys-Cys-Ser-Arg-Lys-Cys-Asn-Arg-Phe-Asn-Lys-Cys-Val (SEQ ID NO:20);

κ-PVIIA[D13A]: Cys-Arg-Ile-Hyp-Asn-Gln-Lys-Cys-Phe-Gln-His-Leu-Ala-Asp-Cys-Cys-Ser-Arg-Lys-Cys-Asn-Arg-Phe-Asn-Lys-Cys-Val (SEQ ID NO:21);

κ-PVIIA[Q10A]: Cys-Arg-Ile-Hyp-Asn-Gln-Lys-Cys-Phe-Ala-His-Leu-Asp-Asp-Cys-Cys-Ser-Arg-Lys-Cys-Asn-Arg-Phe-Asn-Lys-Cys-Val (SEQ ID NO:22);

κ-PVIIA[V27A]: Cys-Arg-Ile-Hyp-Asn-Gln-Lys-Cys-Phe-Gln-His-Leu-Asp-Asp-Cys-Cys-Ser-Arg-Lys-Cys-Asn-Arg-Phe-Asn-Lys-Cys-Ala (SEQ ID NO:23);

κ-PVIIA[O4A]: Cys-Arg-Ile-Ala-Asn-Gln-Lys-Cys-Phe-Gln-His-Leu-Asp-Asp-Cys-Cys-Ser-Arg-Lys-Cys-Asn-Arg-Phe-Asn-Lys-Cys-Val (SEQ ID NO:24); and

κ-PVIIA[N5A]: Cys-Arg-Ile-Hyp-Ala-Gln-Lys-Cys-Phe-Gln-His-Leu-Asp-Asp-Cys-Cys-Ser-Arg-Lys-Cys-Asn-Arg-Phe-Asn-Lys-Cys-Val (SEQ ID NO:25);

(c) a derivative of (a) or (b); and

(d) a physiologically acceptable salt thereof.

Claim 11 (original): The method of claim 10, wherein the size of reperfusion infarct resulting from cardiac ischemia is reduced.

Claim 12 (original): The method of claim 10, wherein Xaa_2 is hydroxy-Pro.

Claim 13 (original): The method of claim 12, wherein the size of reperfusion infarct resulting from cardiac ischemia is reduced.

Claim 14 (original): The method of claim 10, wherein Xaa_1 is Arg, Xaa_3 is Lys, Xaa_4 is Phe and Xaa_5 is His.

Claim 15 (original): The method of claim 14, wherein the size of reperfusion infarct resulting from cardiac ischemia is reduced.

Claim 16 (original): The method of claim 14, wherein Xaa_2 is hydroxy-Pro.

Claim 17 (original): The method of claim 16, wherein the size of reperfusion infarct resulting from cardiac ischemia is reduced.

Claim 18 (original): The method of claim 10, wherein the derivative is peptide of (a) or (b) in which the Arg residues may be substituted by Lys, ornithine, homoargine, nor-Lys, N-methyl-Lys, N,N-dimethyl-Lys, N,N,N-trimethyl-Lys or any synthetic basic amino acid; the Lys residues may be substituted by Arg, ornithine, homoargine, nor-Lys, or any synthetic basic amino acid; the Tyr residues may be substituted with any synthetic hydroxy containing amino acid; the Ser residues may be substituted with Thr or any synthetic hydroxylated amino acid; the Thr residues may be substituted with Ser or any synthetic hydroxylated amino acid; the Phe and Trp residues may be substituted with any synthetic aromatic amino acid; the Asn, Ser, Thr or Hyp residues may be glycosylated (contain an N-glycan or an O-glycan); the Cys residues may be in D or L configuration and may optionally be substituted with homocysteine (D or L); the Tyr residues may also be substituted with the 3-hydroxyl or 2-hydroxyl isomers (meta-Tyr or ortho-Tyr, respectively) and corresponding O-sulpho- and O-phospho-derivatives; the acidic amino acid residues may be substituted with any synthetic acidic amino acid, e.g., tetrazolyl derivatives of Gly and Ala; the aliphatic amino acids may be substituted by synthetic derivatives bearing non-natural aliphatic branched or linear side chains C_nH_{2n+2} up to and including n=8; and pairs of Cys residues may be replaced pairwise with isoteric lactam or ester-thioether replacements, such as Ser/(Glu or Asp), Lys/(Glu or Asp) or Cys/Ala combinations.

Claim 19 (original): The method of claim 18, wherein the size of reperfusion infarct resulting from cardiac ischemia is reduced.

Claim 20 (new): The method of claim 1, wherein the active agent is a compound of the formula Cys-Arg-Ile-Xaa-Asn-Gln-Lys-Cys-Phe-Gln-His-Leu-Asp-Asp-Cys-Cys-Ser-Arg-Lys-Cys-Asn-Arg-Phe-Asn-Lys-Cys-Val (SEQ ID NO:26), wherein Xaa is hydroxy-Pro.

Claim 21 (new): The method of claim 10, wherein the active agent is a compound of the formula Cys-Arg-Ile-Xaa-Asn-Gln-Lys-Cys-Phe-Gln-His-Leu-Asp-Asp-Cys-Cys-Ser-Arg-Lys-Cys-Asn-Arg-Phe-Asn-Lys-Cys-Val (SEQ ID NO:26), wherein Xaa is hydroxy-Pro.